

*Draft B/C*

**WHAT IS CLAIMED IS:**

1. A process for fabricating a semiconductor device having a  
2 buried layer comprising the steps of:  
3       implanting an impurity ion into where the buried layer is  
4       formed in a substrate;  
5       providing the substrate inside a reactor furnace;  
6       preparing a nonoxidizing atmosphere inside of the reactor  
7       furnace;  
8       annealing the substrate to activate and diffuse the implanted  
9       impurity ion region while increasing inside temperature of the reactor  
10      furnace up to a first temperature; and  
11      shifting the inside temperature of the reactor furnace from  
12     the first temperature to a second temperature in which a epitaxial  
13     crystal starts to grow and introducing a epitaxial growth gas into the  
14     reactor furnace to grow an epitaxial layer on a surface of the  
15     substrate.

1. 2. The process for fabricating the semiconductor device as set  
2 forth in claim 1, wherein the step of growing the epitaxial layer is  
3 initiated before the expanded ion implanted region reaches the  
4 surface of the substrate.

1. 3. The process for fabricating the semiconductor device as set  
2 forth in claim 1, wherein the first temperature is lower than the  
3 second temperature.

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1 4. The process for fabricating the semiconductor device as set  
2 forth in claim 1 further comprising the step of:  
3 preparing a cleaning gas in the reactor furnace to clean up the  
4 surface of the substrate between the step of diffusing the ion  
5 implanted region and the step of growing the epitaxial layer.

1 5. The process for fabricating the semiconductor device as set  
2 forth in claim 4, wherein the first temperature is lower than the  
3 second temperature.

1 6. The process for fabricating the semiconductor device as set  
2 forth in claim 4, wherein the first temperature is higher than the  
3 second temperature.

1 7. The process for fabricating the semiconductor device as set  
2 forth in claim 1, wherein the surface of the substrate is covered by  
3 oxide film at the step of implanting the impurity ion.

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1 8. The process for fabricating the semiconductor device as set  
2 forth in claim 4, wherein the cleaning gas is consist of H<sub>2</sub> gas.

1 9. The process for fabricating the semiconductor device as set  
2 forth in claim 4, wherein the cleaning gas includes HCl gas.